IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method of providing an indication signal, comprising:

providing a communication pathway carrying signals;

connecting the communication pathway to an interface device, the interface device having conductors for carrying the signals;

analyzing the signals carried by the conductors to determine which of the conductors are active conductors;

providing active conductor information, wherein the active conductor information includes a list of the active conductors;

providing primary interface class information, wherein the primary interface class information includes information about the active conductors for a known interface class;

determining whether the primary interface class information is similar to the active conductor information; ~~and~~

providing a first indication signal, the first indication signal being a first type if the information about the active conductors for the interface class is similar to the active conductor information, and the first indication signal being a second type if the information about the active conductors for the interface class is not similar to the active conductor information~~.~~;

determining which conductors carry a signal having an alternate voltage; and

determining an average amplitude voltage for each of the conductors carrying a signal having an alternating voltage.

2. (Previously Presented) The method of claim 1, wherein analyzing the conductors to determine which of the conductors are active conductors includes selecting a conductor;

analyzing the signal carried by the selected conductor to determine where a voltage of the signal carried by the selected conductor alternates; and

determining the selected conductor is an active conductor if the voltage of the signal carried by the selected conductor alternates.

3. (Previously Presented) The method of claim 1, wherein the information about the active conductors for the interface class is similar to the active conductor information if the information about the active conductors for the interface class is among the active conductor information.

4. (Currently Amended) The method of claim 1, ~~wherein analyzing the conductors to determine active conductors includes determining which conductors are inactive, wherein determining which conductors are inactive includes:~~

~~determining which conductors carry a signal having an alternating voltage;~~

~~determining an average amplitude voltage for each of the conductors carrying a signal having an alternating voltage;~~

further comprising the step of determining a reference amplitude voltage~~; and~~

~~determining inactive conductors, wherein the inactive conductors are those conductors corresponding to determined average amplitude voltage values that are less than the reference amplitude voltage~~.

5. (Currently Amended) The method of claim 4, ~~wherein determining a reference amplitude voltage includes setting the reference amplitude voltage at one-half of the largest average amplitude voltage.~~further comprising the step of determining inactive conductors, wherein the inactive conductors are those conductors corresponding to determined average amplitude voltage values that are less than the reference amplitude voltage.

6. (Currently Amended) The method of claim [4] 1, wherein determining the average amplitude voltage value for one of the conductors carrying a signal having an alternating voltage includes:

measuring the voltage amplitude of the signal carried by the one of the conductors at a plurality of discrete times during a first time period to provide a first array of voltage amplitudes;

measuring the voltage amplitude of the signal carried by the one of the active conductors at a plurality of discrete times during a second time period to provide a second array of voltage amplitude values;

selecting the maximum voltage amplitude from each array; and

determining the average of the maximum voltage amplitude to provide the average voltage amplitude value.

7. (Currently Amended) The method of claim 1, further comprising the steps of:~~A method of providing an indication signal comprising:~~

~~providing a communication pathway carrying signals;~~

~~connecting the communication pathway to an interface device, the interface device having conductors for carrying the signals;~~

~~analyzing the signals carried by the conductors to determine which of the conductors are active conductors;~~

~~providing active conductor information, wherein the active conductor information includes a list of the active conductors;~~

grouping the active conductors into groups of active conductors, each group of active conductors having a pair of active conductors; and

providing group information, wherein the group information includes information about the active conductors in each group~~;~~.

~~providing primary interface class information, wherein the primary interface class information includes information about the pairing of conductors for a known interface class;~~

~~determining whether the information about the pairing of conductors for the known interface class is similar to the group information; and~~

~~providing a first indication signal, the first indication signal being a first type if the primary interface class information is similar to the group information, and the first indication signal being a second type if the primary interface class information is not similar to the group information.~~

8. (Previously Presented) The method of claim 7, wherein grouping the active conductors into groups includes:

determining possible pairs of active conductors;

determining auto correlation values corresponding to each possible pair of active conductors;

setting a threshold value; and

eliminating one of the possible pairs of active conductors if the corresponding auto correlation value is less than the threshold value.

9. (Previously Presented) The method of claim 8, wherein determining the auto correlation value corresponding to each possible pair of active conductors includes:

selecting a possible pair of active conductors having a first active conductor and a second active conductor;

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a time period to provide a first array of voltage amplitudes corresponding to the first conductor;

squaring each measured amplitude in the first array corresponding to the first conductor and adding the squared measured amplitudes together to provide a first auto correlation value;

measuring a voltage amplitude of the signal carried by the second active conductor at the plurality of discrete times during the time period to provide a second array of voltage amplitudes corresponding to the second conductor;

squaring each measured amplitude in the second array and adding the squared measured amplitudes together to provide a second auto correlation value; and

determining the auto correlation value corresponding to the selected possible pair of active conductors by determining the average of the first auto correlation value and the second auto correlation value.

10. (Previously Presented) The method of claim 8, wherein determining the auto correlation values corresponding to each possible pair of active conductors accounts for periodicity in signals carried by each possible pair of active conductors.

11. (Previously Presented) The method of claim 10, wherein determining the auto correlation values corresponding to each possible pair of active conductors includes:

selecting a possible pair of active conductors having a first active conductor and a second active conductor;

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a first time period to provide a first array of voltage amplitudes corresponding to the first conductor;

squaring each measured amplitude in the first array corresponding to the first conductor and adding the squared measured amplitudes together to provide a first auto correlation value;

measuring a voltage amplitude of the signal carried by the second active conductor at a plurality of discrete times during a second time period, different from the first time period, to provide a second array of voltage amplitudes corresponding to the second conductor;

squaring each measured amplitude in the second array and adding the squared measured amplitudes together to provide a second auto correlation value; and

determining the auto correlation values corresponding to the selected possible pair of active conductors by determining the average of the first auto correlation value and the second auto correlation value.

12. (Previously Presented) The method of claim 8, wherein the threshold value is equal to a multiple of the lowest auto correlation value corresponding to one of the possible pairs of active conductors.

13. (Previously Presented) The method of claim 12, wherein the multiple is four.

14. (Withdrawn) The method of claim 7, wherein grouping the active conductors into groups includes:

selecting a first active conductor and a second active conductor to provide a possible pair of active conductors;

determining a cross correlation value corresponding to the possible pair of active conductors;

setting a threshold value; and

eliminating the possible pair of active conductors if the cross correlation value is less than the threshold value.

15. (Withdrawn) The method of claim 14, wherein the threshold value is equal to a fraction of an auto correlation value corresponding to the possible pair of active conductors.

16. (Withdrawn) The method of claim 15, wherein the auto correlation value corresponding to the possible pair of active conductors is determined by:

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a first time period to provide a first array of voltage amplitudes;

squaring each measured amplitude in the first array and adding the squared measured amplitudes together to provide a first sum of squares value;

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a second time period to provide a second array of voltage amplitudes;

squaring each measured amplitude in the second array and adding the squared measured amplitudes together to provide a second sum of squares value;

determining a first auto correlation value by adding the first sum of squares value to the second sum of squares value;

measuring a voltage amplitude of the signal carried by the second active conductor at the plurality of discrete times during the first time period to provide a third array of voltage amplitudes;

squaring each measured amplitude in the third array and adding the squared measured amplitudes together to provide a third sum of squares value;

measuring a voltage amplitude of the signal carried by the second active conductor at the plurality of discrete times during the second time period to provide a fourth array of voltage amplitude values;

squaring each measured amplitude in the fourth array and adding the squared measured amplitudes together to provide a fourth sum of squares value;

determining a second auto correlation value by adding the third sum of squares value to the fourth sum of squares value; and

determining the auto correlation value corresponding to the one of the possible pairs of active conductors by determining the average of the first auto correlation value and the second auto correlation value.

17. (Withdrawn) The method of claim 15, wherein the auto correlation value corresponding to the possible pair of active conductors accounts for periodicity in signals carried by the possible pair of active conductors.

18. (Withdrawn) The method of claim 17, wherein the auto correlation value corresponding to the possible pair of active conductors is determined by:

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a first time period to provide a first array of voltage amplitudes;

squaring each measured amplitude in the first array and adding the squared measured amplitudes together to provide a first sum of squares value;

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a second time period to provide a second array of voltage amplitudes;

squaring each measured amplitude in the second array and adding the squared measured amplitudes together to provide a second sum of squares value;

determining a first auto correlation value by adding the first sum of squares value to the second sum of squares value;

measuring a voltage amplitude of the signal carried by the second active conductor at a plurality of discrete times during a third time period, different from the first time period, to provide a third array of voltage amplitudes;

squaring each measured amplitude in the third array and adding the squared measured amplitudes together to provide a third sum of squares value;

measuring a voltage amplitude of the signal carried by the second active conductor at a plurality of discrete times during a fourth time period, different from the second time period, to provide a fourth array of voltage amplitude values;

squaring each measured amplitude in the fourth array and adding the squared measured amplitudes together to provide a fourth sum of squares value;

determining a second auto correlation value by adding the third sum of squares value to the fourth sum of squares value; and

determining the auto correlation value corresponding to the one of the possible pairs of active conductors by determining the average of the first auto correlation value and the second auto correlation value.

19. (Withdrawn) The method of claim 14, wherein the fraction is one-half.

20. (Withdrawn) The method of claim 14, wherein determining the cross correlation value includes:

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a first time period to provide a first array of voltage amplitudes;

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a second time period to provide a second array of voltage amplitudes;

measuring a voltage amplitude of the signal carried by the second active conductor at the plurality of discrete times during the first time period to provide a third array of voltage values;

measuring a voltage amplitude of the signal carried by the second active conductor at the plurality of discrete times during the second time period to provide a fourth array of voltage values; and

multiplying voltage values in the first array with corresponding voltage values in the third array, and multiplying voltage values in the second array with corresponding voltage values in the fourth array, and adding the products together to provide the cross correlation value.

21. (Withdrawn) The method of claim 14, wherein determining the cross correlation value accounts for periodicity in signals carried by the possible pair of active conductors.

22. (Withdrawn) The method of claim 21, wherein determining the cross correlation value includes:

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a first time period to provide a first array of voltage amplitudes;

measuring a voltage amplitude of the signal carried by the first active conductor at a plurality of discrete times during a second time period to provide a second array of voltage amplitudes;

measuring a voltage amplitude of the signal carried by the second active conductor at a plurality of discrete times during a third time period, different from the first time period, to provide a third array of voltage values;

measuring a voltage amplitude of the signal carried by the second active conductor at a plurality of discrete times during a fourth time period, different from the second time period, to provide a fourth array of voltage values; and

multiplying voltage values in the first array with corresponding voltage values in the third array, and multiplying voltage values in the second array with corresponding voltage values in the fourth array, and adding the products together to provide the cross correlation value.

23. (Previously Presented) The method of claim 7, wherein the primary interface class information is similar to the group information if the primary interface class information is among the group information.

24. (Withdrawn) A method of providing an indication signal, comprising:

providing a communication pathway carrying signals;

connecting the communication pathway to an interface device, the interface device having conductors for carrying the signals;

analyzing the signals carried by the conductors to determine which of the conductors are active conductors;

grouping the active conductors into groups of active conductors, each group of active conductors having a pair of active conductors;

receiving a first group signal, the first group signal including the signals carried by a first group of active conductors;

determining a fourth moment of the first group signal;

providing interface class information, wherein the interface class information includes information about a fourth moment of a pair signal, the pair signal being a signal corresponding to conductors corresponding to the first group of active conductors;

determining whether the fourth moment of the pair signal is similar to the fourth moment of the first group signal; and

providing an indication signal, the indication signal being a first type if the information about the fourth moment of the pair signal is similar to the fourth moment of the first group signal, and the indication signal being a second type if the information about the fourth moment of the pair signal is not similar to the fourth moment of the first group signal.

25. (Withdrawn) The method of claim 24, wherein the fourth moment of the pair signal is similar to the fourth moment of the first group signal if the fourth moment of the pair signal is within about 35% of the fourth moment of the first group signal.

26. (Withdrawn) A method of providing an indication signal, comprising:

providing a communication pathway carrying signals;

connecting the communication pathway to an interface device, the interface device having conductors for carrying the signals;

analyzing the signals carried by the conductors to determine which of the conductors are active conductors;

grouping the active conductors into groups of active conductors, each group of active conductors having a pair of active conductors;

receiving a first indication signal corresponding to a first interface class indicating the first interface class is possibly used on the communication pathway;

receiving a second indication signal corresponding to a second interface class indicating the second interface class is possibly used on the communication pathway;

providing interface class information;

providing first group signal information relating to signals carried by a first one of the groups of active conductors;

determining a first difference between the first interface class information and the first group signal information;

determining a second difference between the second interface class information and the first group signal information;

comparing the first difference with the second difference; and

providing an indication signal, the indication signal being a first type if the first difference is less than the second difference, and being a second type if the second difference is less than the first difference.

27. (Withdrawn) The method of claim 26, wherein the interface class information includes information related to a spectral density of a signal characteristic of the first interface class and includes information related to a spectral density of a signal characteristic of the second interface class.

28. (Withdrawn) The method of claim 27, wherein the information related to the spectral density of a signal characteristic of the first interface class includes a bit rate, and the information related to the spectral density of a signal characteristic of the second interface class includes a bit rate.

29. (Withdrawn) The method of claim 26, wherein the first group signal information includes a bit rate.

30. (Withdrawn) The method of claim 29, wherein the bit rate is determined using a phase lock loop circuit.

31. (Withdrawn) The method of claim 29, wherein the bit rate is determined by analyzing the zero crossing of the signals carried by the first one of the groups of active conductors.

32. (Withdrawn) The method of claim 26, wherein the first group signal information corresponds to a spectral density of the signals carried by the first one of the groups.

33. (Withdrawn) The method of claim 26, wherein the interface class information includes first interface class FFT information and includes second interface class FFT information, the first interface class FFT information corresponding to a fast fourier transform of a pair signal corresponding to the first interface class, and the second interface class FFT information corresponding to a fast fourier transform of a pair signal corresponding to the second interface class, and the first group signal information includes information related to a fast fourier transform corresponding to a first group signal.

34. (Withdrawn) The method of claim 33, wherein the first interface class FFT information includes data points generated by the fast fourier transform of the pair signal corresponding to the first interface class that have been smoothed by a Savitzky-Golay filter.

35. (Withdrawn) The method of claim 33, wherein the first group signal FFT information includes data points generated by the fast fourier transform of the first group signal that have been smoothed by a Savitzky-Golay filter.

36. (Withdrawn) The method of claim 33, wherein determining the first difference includes determining the squared error between the first interface class FFT information and the first group signal FFT information.

37. (Currently Amended) A discovery device, comprising:

a switch interface device having a first connector including a first set of conductors, a conductor selection device and a second connector, the first connector being capable of connecting to a communication pathway and carrying signals from the communication pathway via the conductors, and the conductor selection device being connected to the first connector and the second connector; and

a computer connected to the second connector and having software running thereon, the software being capable of instructing the computer to determine which of the conductors are active or inactive, the active conductors being those that carry the signals~~;~~, the inactive conductors being determined by finding an average amplitude voltage for each of the conductors carrying a signal having an alternating voltage and comparing the average amplitude voltage to a reference amplitude voltage;

wherein the software is further capable of instructing a computer to compare a list of the active conductors to an interface class list, the interface class list identifying conductors used in transmitting signals according to the interface class, and if the list of the active conductors is similar to the interface class list, then instructing the computer to send a signal identifying the interface class.

38. (Cancelled)

39. (Previously Presented) The device of claim 37, wherein the software is further capable of instructing the computer to determine which conductors are carrying signals representing differentially driven data corresponding to the same signal, and capable of instructing the computer to group the conductors into conductor groups, each conductor group representing conductors carrying differentially driven data corresponding to the same signal.

40. (Previously Presented) The device of claim 39, wherein the software is further capable of instructing the computer to determine whether the conductors in each conductor group are similar to sets of conductors used in transmitting signals according to an interface class, and if the conductors in each conductor group are similar to the sets of conductors, then instructing the computer to send a signal identifying the interface class.

41. (Previously Presented) The device of claim 37, wherein the conductor selection device is capable of selecting between the conductors, and connecting some of the conductors to the second connector.

42. (Previously Presented) The device of claim 37, further comprising an attenuator connected between the first and second connectors for attenuating a signal carried between the first and second connectors.

43. (Previously Presented) The device of claim 42, wherein the conductor selector is capable of selecting two conductors, and the device further comprises a shunt load apparatus disposed between the two conductors.

44. (Currently Amended) A computer readable storage medium having encoded thereon computer readable instructions capable of instructing a computer to:

analyze signals carried by conductors connected to a communication pathway to determine which of the conductors are active conductors;

determine active conductor information, wherein the active conductor information includes a list of the active conductors;

compare the active conductor information to interface class information, wherein the interface class information includes information about the active conductors for a known interface class;

determine whether the interface class information is similar to the active conductor information; ~~and~~

provide an indication signal, the indication signal being a first type if the interface class information is similar to the active conductor information, and the indication signal being a second type if the interface class information is not similar to the active conductor information.;

determine which conductors carry a signal having an alternate voltage; and

determine an average amplitude voltage for each of the conductors carrying a signal having an alternating voltage.

45. (Currently Amended) A computer readable storage medium having encoded thereon computer readable instructions capable of instructing a computer to:

analyze signals carried by conductors connected to a communication pathway, to determine which of the conductors are active conductors;

determine which conductors carry a signal having an alternate voltage;

determine an average amplitude voltage for each of the conductors carrying a signal having an alternating voltage;

determine a reference amplitude voltage;

determine inactive conductors, wherein the inactive conductors are those conductors corresponding to determined average amplitude voltage values that are less than the reference amplitude voltage;

group the active conductors into groups of active conductors, each group of active conductors having a pair of active conductors;

compare group information to interface class information, wherein the group information includes information about the active conductors in each group, and the interface class information includes information about the grouping of conductors for a known interface class;

determine whether the interface class information is similar to the group information; and

provide a first indication signal, the first indication signal being a first type if the interface class information is similar to the group information, and the first indication signal being a second type if the interface class information is not similar to the group information.